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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,796	01/08/2004	Rajiv Vijayan	030289	8575
23596 7590 04/29/2008 QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121				
EXAMINER				
HYUN, SOON D				
ART UNIT		PAPER NUMBER		
2616				
NOTIFICATION DATE		DELIVERY MODE		
04/29/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/754,796

**Applicant(s)**

VIJAYAN ET AL.

**Examiner**

SOON-DONG D. HYUN

**Art Unit**

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 12-32 is/are allowed.  
6) ☒ Claim(s) 1-3 and 6-11 is/are rejected.  
7) ☒ Claim(s) 4 and 5 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/85/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3, 6-9 and 11 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 6-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhou et al (U.S. Patent No. 7,292,527).

Regarding claims 1, 10, and 11, Zhou et al discloses a method of performing frequency error estimation and frame synchronization at a receiver in an orthogonal frequency division multiplexing (OFDM) communication system, the method comprising: estimating frequency error at the receiver based on received symbols and a metric indicative of detected pilot power (col. 5, lines 47-56, col. 6, lines 13-27);

removing the estimated frequency error to obtain frequency-corrected pilot symbols (col. 6, lines 46-48); and

performing frame synchronization based on the metric and the frequency-corrected pilot symbols (col. 5, lines 4-11).

Regarding claim 2, Zhou further discloses that the metric is based on cross-correlation between two received symbols for two symbol periods (col. 5, lines 47-56).

Regarding claim 3, Zhou further discloses that the metric is based on matched filtering received symbols with channel gain estimates (col. 3, lines 52-63).

Regarding claim 6, Zhou further discloses the step of descrambling the frequency-corrected pilot symbols with a pseudo-random number (PN) sequence to obtain descrambled pilot symbols, wherein the PN sequence is aligned based on the frame synchronization; and estimating channel gain based on the descrambled pilot symbols (col. 5, line 12-36).

Regarding claim 7, Zhou further discloses the step of performing data detection on frequency-corrected data symbols with channel gain estimates to obtain detected data symbols (col. 3, line 44- col. 4, line 16).

Regarding claim 8, Zhou further discloses that the estimated frequency error is removed by rotating time-domain samples prior to performing fast Fourier transform (FFT) to obtain the received symbols (col. 4, lines 37-58).

Regarding claim 9, Zou further discloses that the estimated frequency error is removed by shifting sub-band indices by the estimated frequency error (col. 6, lines 13-48).

***Allowable Subject Matter***

3. Claims 12-32 are allowed
4. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOON-DONG D. HYUN whose telephone number is (571)272-3121. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chi H Pham/

Art Unit: 2616

Supervisory Patent Examiner, Art  
Unit 2616

4/25/08

/Soon D Hyun/

Examiner, Art Unit 2616